SCIENCE

FRIDAY, JULY 29, 1887.

WILL THE READER please cast his eye upon the following questions: 1. How can it be proved that nicotine is a poison? 2. Why are cigarettes especially harmful? 3. Is alcohol a food? 4. What is the effect of disuse upon a muscle? 5. Under what names is opium sold? 6. Under what names is alcohol drunk? 7. What is the difference between a food and a poison? 8. Is any thing gained by changing from one narcotic to another? 9. What is the effect of beer as a drink? 10. How does cheerfulness help the muscle? These are the questions given as a test in physiology in the public schools of a prominent Eastern city. They are not addressed to young men about to leave school. No, they are asked of little boys and girls of from eight to ten years of age. This is the examination-paper at the end of the first year's elementary instruction in physiology. Of ten questions, eight relate to drinking and smoking: the physiology is a mere side issue. These children, who ought to have about as much knowledge of such matters as they should of the methods in vogue at the stock exchange, are actually forced to learn by rote the details of human vice; and that, too, under the name of 'physiology,' the only science which they learn. Unconsciousness, *naïveté*, is the symbol of childhood. The fact that physiology, even if well taught, tends to destroy this trait, is the chief objection to its early study. Instruction such as the above implies crushes the most valuable trait in the child, directs its curiosity to what is morbid, and forces into precocious development all its dangerous elements. Not enough that the newspaper and the dime novel proclaim in glaring colors the story of crime and sin: some notion of the perversity of human nature must be mixed with the food of babes. That the result of this teaching is to excite in the children a morbid curiosity to experiment for themselves in such matters; or (with the boys) to regard the whole thing as a lesson in 'goody-goodyness,' to which they forthwith decide to show themselves superior; or to regard their father, who takes his glass of wine at dinner, as an incipient criminal, — this could easily have been foreseen, and goes without saying. If there is one method better than all others to produce a race of drunkards, this has good claims to that distinction. If there is a degree of wrong in such superlatively perverse methods, then it is still worse that the fair name of science should be outraged in this cause. Not only that this kind of teaching necessarily depends upon catechism methods (that the answer to the second question, for example, is to read that the especial perniciousness of cigarettes is due to the fact that they are usually made of decayed cigar-stumps), but that the entire idea of science thus implanted is as wrong as it well can be. Better far revert to the old days when there was no science on the curriculum than have science thus taught. The crowning educational virtue of science is that it leads to the use of scientific methods of teaching: this usurper chokes up all possibility of an interest in the scientific. The 'temperance' question is doubtless one of the most important with which our age has to deal; sufficiently important, perhaps, to make some consideration of it in the public schools a legitimate proceeding, but it must be done at the right time and in the proper way. Nothing can excuse the conversion of a text-book on physiology into a 'temperance' tract: nothing can excuse the sacrilege of presenting this story of disgusting vice under the name of 'science.'

THE STATEMENTS by Mr. W. Glenn in *Science* of July 15, as to the freedom from disease of men employed in the Baltimore sewers, are of greater interest in view of the report of Professor Carnelley, D.Sc., and Mr. Haldane, of University College, Dundee, referred to in *Engineering* lately. These gentlemen have been investigating the impurities of sewer-air, and find that the organic acid in the sewers examined was about twice, and the organic matter three times, that of the outside air, whereas the number of micro-organisms was less. As regards the quantity of these three impurities, the air of the sewers was better than the air of naturally ventilated schools, while even mechanically ventilated schools were more polluted with organic matter. The sewer-air contained a much smaller number of micro-organisms than the air of any class of house, and the carbonic acid was rather greater than the air of houses of four rooms and upwards, but less than in two and one roomed houses. As regards organic matter, however, the sewer-air was only slightly better than the air of one-roomed houses, and much worse than that of other classes of houses. The amount of carbonic acid found by the observers shows that the sewers observed were better ventilated than those investigated by previous observers. They attribute the excess of carbonic acid over that of the outside air chiefly to oxidation of organic matter in the sewage and the air of the sewer. The excess of organic matter is probably chiefly gaseous, and derived from the sewage itself. The micro-organisms in sewer-air come entirely, or nearly so, from outside, and are not derived, or only so in relatively small numbers, from the sewer itself. This important conclusion is proved by the facts that the average number of micro-organisms in sewer-air was less than in the outside air, namely, as 9 to 16; that the number increased with the efficacy of the ventilation; that the average proportion of moulds to bacteria in sewer-air was almost exactly the same as in outside air at the same time, whereas one would expect the proportion to be very different were the outside air not the source from which they were derived, seeing that such a difference has been proved to exist in the air of houses and schools. Another consideration is that the filthiness of a sewer seems to have no influence on the number of micro-organisms. Further experiments in the laboratory showed that the number of micro-organisms in sewer-air is diminished nearly a half in passing along a moist tube 5 feet long and 1⅝ inches in diameter, at a rate of nearly 1 foot per second. There was, however, distinct evidence of the occasional dissemination of micro-organisms from the sewage itself; especially in splashing, owing to drains entering the sewers at points high up in the roofs. It is therefore important that drains should be arranged to avoid splashing.

TOPOGRAPHICAL SURVEY OF THE UNITED STATES.

IT is some eight years since the passage of the law creating the U. S. Geological Survey. This survey is charged, among other things, with making a geological map of the United States. For this purpose, it is desirable to have good maps for the use of the geologist in the field, and for the exhibition of results. No map of the whole country, suitable for the purpose, exists, and, of many and extensive portions, rude and imperfect diagrams constitute the only maps. The Geological Survey, therefore, first sought to have inaugurated a general topographical survey of the whole country.

The superintendent of the Coast and Geodetic Survey was conferred with and solicited to undertake the work, and a little work was actually undertaken, but none upon a general or comprehensive plan. The Geological Survey, therefore, finding that no satisfactory progress in geological work was possible without suitable maps, set about organizing topographic work on a systematic and comprehensive plan.

The plan of work, the scale to be adopted, the methods to be used with a view to efficiency, rapidity, and economy, were carefully considered, and then a plan was adopted, subject to such modifications as experience should suggest. Although this plan, and the progress of the work, have been set forth in various official documents, nevertheless they seem to be very little known.

It therefore appears desirable to set forth in brief and simple form the plan which the Geological Survey has, after mature consideration, adopted for making a topographic map of the United States, and the progress which has been made in the prosecution of the adopted plan.

It was decided to make a map which, although primarily designed for the use of the geological corps, should be upon such scales and should represent such features as to make it subserve all purposes to which a general topographic map is applicable, — in short, that it should be *the topographic map of the United States*.

The question of the scale or scales of the map is one of the utmost importance, as upon this depends, on the one hand, the degree of accuracy and the amount of detail necessary to be obtained in the survey, and, upon the other, the value of the map. It was seen at once that it would be inadvisable to attempt to make the maps of all parts of the country upon the same scale. The differences in degree of settlement, in material wealth, in the character of the prevalent industries, in the complexity of geological phenomena, and in the amount and degree of detail of the relief, all emphasize the desirability of varying the scale in different parts of the country.

A scale of 1 : 62,500, or about one mile to an inch, was adopted for the most populous regions, after a careful consideration of the requirements which such a map should meet, and with full knowledge of the experience of European nations in this matter. In the southern and central States, the conditions of settlement, the character of the industries, and other conditions, appear to admit the use of a smaller scale, and accordingly for this area the scale was fixed at 1 : 125,000 or about two miles to an inch.

In the sparsely settled region of the Rocky Mountain plateau, a still further reduction appeared advisable; and for this region, with the exception of certain small areas which for special reasons appeared to require a larger scale, it was fixed at 1 : 250,000, or about four miles to an inch.

The maps represent all natural features of drainage and relief, in degree of detail proportioned to the scale. They represent all *public* culture, i.e., all such of the works of man as have relation to communities as distinguished from individuals. This excludes, it is true, a large part of the culture, but the portion excluded seems for various reasons to be out of place upon such a map. It is of little general interest; it is evanescent, much of it to such a degree that by the time the map is published it would be incorrect and misleading. Its adoption would require the use of a large number of arbitrary symbols, which would be unintelligible without an extensive legend upon each sheet; and, furthermore, the inclusion of so large an amount of cultural material would serve to confuse the map and render its more important parts illegible.

Relief is expressed by contours. The contour-interval, or, as it may be designated, the vertical scale, is adjusted to the horizontal scale, and to the degree of relief of the country. It ranges from 10 to 200 feet; the smallest contour-interval accompanying the largest scale, and *vice versa*.

The size of sheets is so arranged that each sheet upon the smallest scale comprises a square degree, i.e., a degree of latitude by a degree of longitude. Upon the scale of 1 : 125,000, each sheet is 30 minutes in each dimension, and upon the scale of 1 : 62,500, each sheet is 15 minutes in each dimension.

The field-work of the survey is carried on with direct reference to the scale of publication. The accuracy, the amount of geometric control, and the degree of detail of the sketching, are proportioned to this scale. A greater degree of accuracy than is required is undesirable, on account of the increased cost. A greater degree of detail in the sketching than is demanded by the scale is not only useless, but worse than useless, as it involves generalization in the office in order to adapt it to the scale, and such generalization cannot be as satisfactory as if made in the field.

For convenience, the original maps and the plane-table sheets are usually made upon scales larger than those of publication. The following table shows the scales in use for the original platting of the maps, the scales of publication, and the contour-intervals, together with the areas surveyed in 1886, in the several areas of work: —

	Field-Scale.	Publication-Scale.	Contour-Interval.	Area surveyed in 1886.
Massachusetts	1 : 30,000	1 : 62,500	20 and 40	3,359
New Jersey	1 : 20,000	1 : 62,500	10 and 20	1,400
District of Columbia	1 : 30,000	1 : 62,500	20	275
Appalachian	1 : 126,720	1 : 125,000	100	19,054
Kansas	1 : 63,360	1 : 125,000	50	6,000
Missouri	1 : 63,360	1 : 125,000	50	4,450
Texas	1 : 126,720	1 : 125,000	50	4,388
Arizona	1 : 126,720	1 : 250,000	100	7,800
California	1 : 63,360	1 : 125,000	200	3,025
Oregon	1 : 126,720	1 : 250,000	200	3,000
Montana	1 : 126,720	1 : 250,000	200	3,300
Total				56,051

At the close of the year 1886, areas amounting to 250,000 square miles, or about one-fourteenth of the area of the country, including Alaska, had been surveyed.

This work is carried on by a Division of Geography, having a *personnel* numbering about one hundred permanent employees besides the temporary aids and camp hands employed during the field-season. The organization of the division during the field-season of 1886 was as follows: —

Sections.	Sub-sections.	Parties.	No. men.
North-eastern	Massachusetts	4 topographic	37
	New Jersey	1 topographic	11
	Dist. of Columbia	1 topographic	2
Appalachian		7 topographic 1 triangulation	58
Central	Kansas	1 topographic 1 triangulation	10
	Missouri	1 topographic	5
Western	Texas	1 triangulation 2 topographic	11
	Arizona	1 topographic and triangulation	5
	California	1 triangulation 2 topographic	7
	Oregon	2 topographic and triangulation	6
	Montana	1 triangulation 2 topographic	8

The names given to the sub-sections indicate the fields of work, and the number of men includes permanent assistants and temporary aids, but not laboring force. The work is everywhere controlled by triangulation. Topographic work is prosecuted in part by plane-table, using it by the method of intersections and by traverse methods. Both these methods are in use in Massachusetts. The work in the western part of the State is done entirely by plane-table; that in the wooded, level country in the south-east, by traverse, using the compass for direction and the telemeter for distance, elevations being measured by the vertical circle and by the Y-level. In the north-east the two methods are combined to good advantage, the work of the plane-table being supplemented by telemeter traverses. In New Jersey the survey is made in plan by traverse, with the compass and odometer. The vertical element is subsequently added by Y-level. In the area adjacent to the District of Columbia, the survey is made by telemeter traverse. In the Appalachian Mountain region, south of Mason and Dixon's line, the triangulation rests upon the Appalachian belt of the U. S. Coast and Geodetic Survey. The topographic work is in part done by the plane-table, or the kindred method with the theodolite, but mainly by traverse with compass and odometer. Elevations are determined by barometer and the vertical circle.

In Missouri and Kansas the work is greatly expedited by the

use of the rectangular surveys of the General Land Office, which extend over this region. The township-plats supply more or less fully the drainage, and, in addition to this, they cover the ground with located points, the township, section, and quarter-section corners. Furthermore, throughout the settled portions of Kansas, and in the greater portion of Missouri, the roads, fences, hedges, etc., mark the lines of subdivision in such a manner that the country is graphically subdivided, and the location of features horizontally becomes simply a matter of sketching. In Kansas these lines of subdivision are controlled by belts of triangulation, which, starting from lines of the transcontinental belt of the Coast and Geodetic Survey, run westward, midway between parallels of latitude. In Missouri the work is controlled by the transcontinental belt of the Coast and Geodetic Survey. Each triangulation point is connected with the nearest township or section corner. The topographic work consists in the verification of the drainage of the Land Office plats, in supplementing it wherever necessary, and in adding the culture and relief. Heights are measured by barometer, and the profiles of railroads are utilized.

The work in the various fields of the Western section is carried on by methods quite similar to one another. The triangulation in Texas rests upon a base-line, measured near Austin, and the Coast and Geodetic Survey's determination of that city furnishes the initial astronomical location. The triangulation in Arizona, with that of a considerable area adjacent to it in New Mexico, Utah, and Nevada, starts from a base near Fort Wingate, N. Mex., and rests upon the astronomic determination of that place. The triangulation in Oregon and California rests upon lines furnished by the Coast and Geodetic Survey; while that in Montana rests upon a base measured near Bozeman, and upon the astronomical determination of that place made by the Wheeler Survey. The topographic work of this section is done by plane-table, supplemented in greater or less degree by traverses. The plane-table work is regarded, however, as a sketch, and, coincidently with it, a secondary triangulation is carried on with theodolites, which, when platted, serves to correct the plane-table sketch. Heights are measured with the barometer and the vertical circle.

The quality of the work is to be measured first by the accuracy of the geometric control; second, by its quantity, i.e., by the number of located points per square inch of map-surface; third, by the distribution of these points; and, fourth, by the quality of the sketching, by which the geometric skeleton is filled out into the proportions of the map. The angles in the primary triangulation are read by instruments having circles 6 to 11 inches in diameter, reading to 5 or 10 seconds. The mean closure errors in the various sections are as follows: —

	"
Appalachian	16.00
Kansas	6.60
Texas	6.13
Arizona	9.05
California	20.39
Oregon	22.04
Montana	15.63

Within this primary work, a secondary system is usually carried on, with minute-reading theodolites; and, resting upon these locations, large numbers of minor points are determined by the plane-table, or by traverse, coincidently with the sketching of topography. Thus as the lines to be determined become shorter, and the probability of an accumulation of error less, the means provided for their measurement are proportionately less accurate, until, in the ultimate work, — that of sketching, — the only means of measurement are the eye and hand of the topographer. It does not follow from this, however, that any part of the geometric work is in appreciable error. It is required that all location shall be sensibly accurate *upon the map*, and this condition is everywhere fulfilled.

Second, the number of located points, or the amount of geometric control, varies with the character of the country. The number of such points is necessarily greater in a country of high relief than in one of low, rolling hills; it is greater in a country of small, abrupt features than in one of large features; it is greater in a well-settled country, containing many cultural features, than in an unsettled one. Consequently, in this regard, the work done in different areas varies greatly, as will be seen by the following table, relating to the work of 1886. This shows the number in each square inch of map of occupied points, of points located by angles, of inches of traverse line, and of traverse stations: —

	Triangulation Stations per sq. in.	Triang. Stations and Locations per sq. in.	Inches of Traverse per sq. in.	Traverse Stations per sq. in.
Massachusetts, Plane-table work	1	6.5	–	–
" Traverse work	–	–	2.8	24
" Mixed work	0.3	1.7	2.6	10
New Jersey	–	-	2.2	21
Dist. of Columbia, and vicinity	–	–	2.5	9
Appalachian region	0.1	0.3	1.4	30
Missouri	-	–	1.7	–
Kansas	–	–	0.7	–
Texas	0.1	0.25	0.9	9
Arizona	0.2	1.2	1.1	2
California	0.3	4	1.4	12
Oregon	0.3	4	1.3	5
Montana	0.25	3.2	–	–

In the above table the points located by the two methods of intersection and traverse are given separately. This has been done because they differ in value. Those made by intersection are

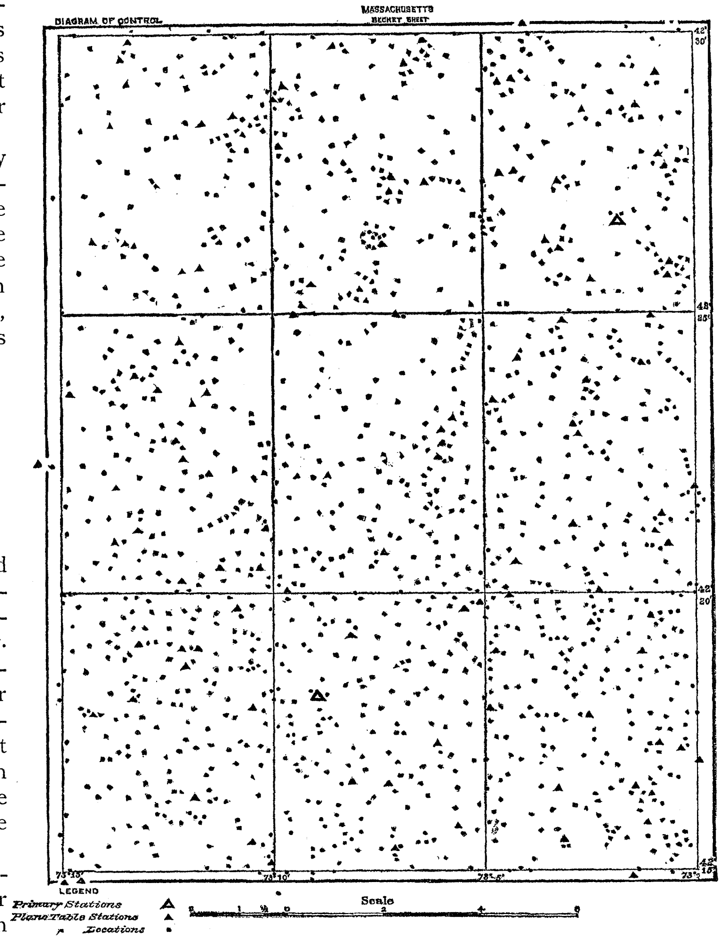

FIG. 1.

selected points, chosen because of their value in controlling area, while of the traverse locations a large proportion have no value whatever except for the purpose of carrying forward the line, and

comparatively few of them would be selected as key points for location purposes. Even with this qualification, caution is needful in making comparisons between different pieces of work. The undulating, sparsely settled Texas area, and the monotonous plateaus of Arizona, must not be contrasted with western Massachusetts, where abrupt hills and an abundance of cultural features require a large number of locations, and render it practicable to make them.

Third, the distribution of locations is a matter of no less importance than their number. To illustrate the degree of uniformity of their distribution, the following cuts are presented. Fig. 1 represents the geometric control of an atlas sheet, from the plane-table work of Massachusetts; and Fig. 2, a sheet from the traverse work in the same State; the lines representing the lines of traverse, and the triangles the triangulation points which serve to check the traverses. Fig. 3 represents the control of an Appalachian sheet, showing triangulation stations, locations by intersections, and traverse lines. It will be seen that the distribution is quite uniform. It will be noticed, further, that in a country composed of an alternation of mountain and valley, as the Appalachian region, most of the locations by intersections are upon the mountain ranges, while the traverse lines are mainly found in the valleys.

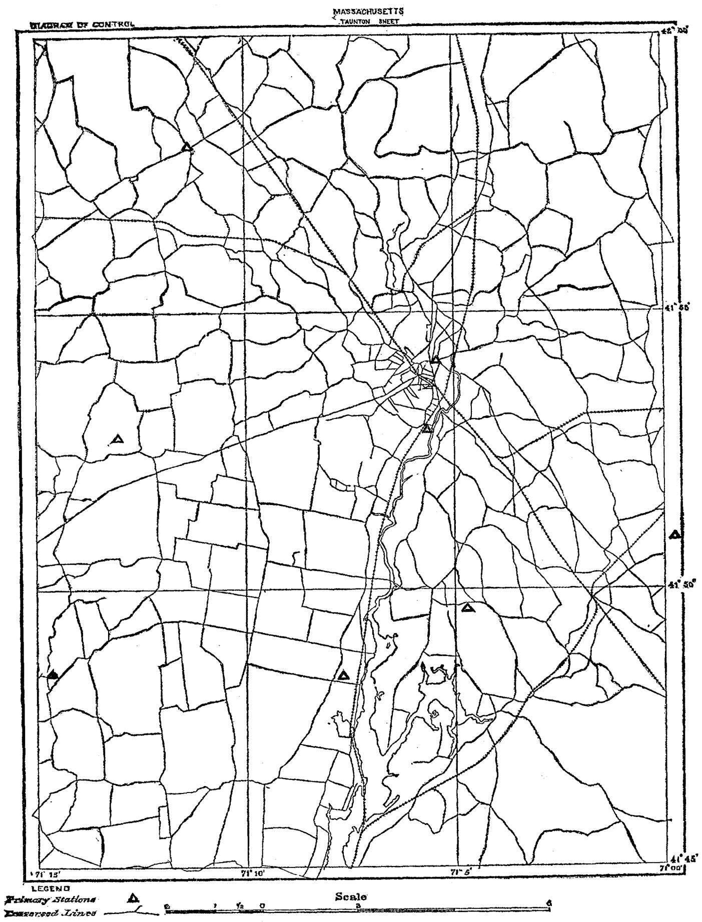

FIG. 2.

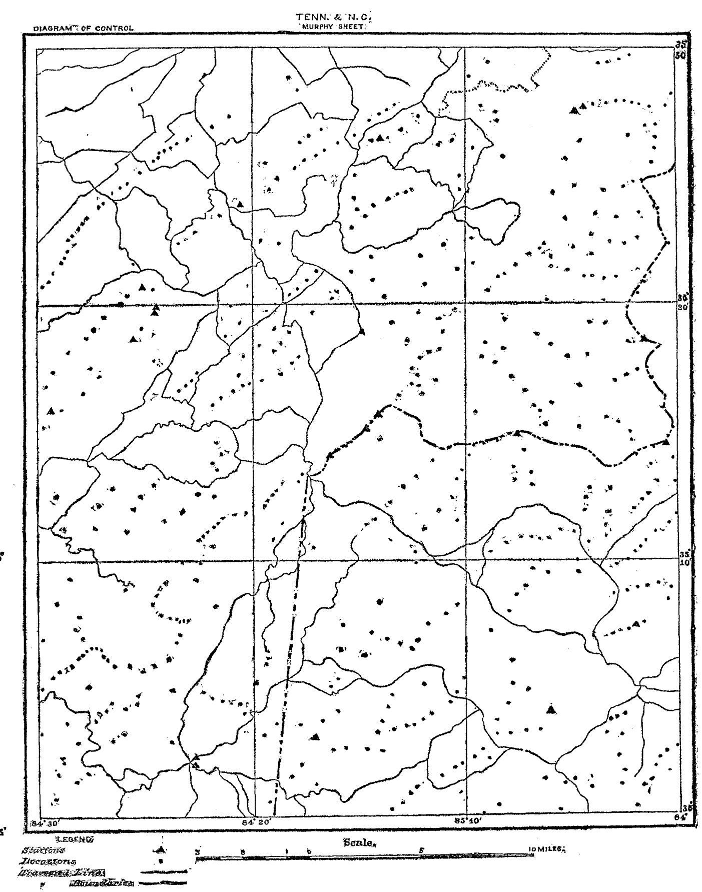

FIG. 3.

Fourth, concerning the quality of the sketching, little can be said. There are no means of verifying this work, except by an examination of it on the ground. It is in this part of the work more than any other that the personality of the topographer appears. It is here that his artistic sense, and his power of making his pencil record faithfully his conceptions, comes into play. It is scarcely necessary to add that no two topographers will sketch an area precisely the same. There will be differences in seeing, and differences in drawing, just as there are differences in handwriting. Every map, whatever its scale, is a reduction from nature. This reduction necessarily implies a certain amount of generalization. Certain features must be omitted, others merged into larger features, so that no map is or can be an exact miniature. Every map is more or less idealized. No two men will generalize an area of country, to adapt it to the scale, in precisely the same way. Some will generalize more, others less; some will omit this feature, others that; and they will merge minor features in various ways. The smaller the scale, the greater is the generalization, and, consequently, the greater room for differences in the work of different topographers.

The cost of the work is influenced by a great variety of conditions, the principal of which are the following: —

a. The Scale. Other conditions being similar, the cost increases with the scale, at a rate somewhat less than a geometric ratio, i.e., if the scale be doubled, the cost is somewhat less than four times as great.

b. The character and amount of the relief, drainage, and culture. The greater the relief, and the greater its detail, the more the work will cost. Work in a thickly settled country, containing many settlements, roads, etc., necessarily costs more than that in one of sparse settlement.

c. The degree in which a country is covered with forests. This element not only interposes obstacles and causes delays in the prosecution of work, but often necessitates the adoption of slower and more expensive methods of work.

d. Atmospheric conditions. This includes stormy weather, haze and smoke, which, being especially prevalent during the field-season in some localities, unduly increase the cost of the work.

e. Length of field-season. At the opening of each field-season, it is necessary to devote some time and money to outfitting the parties and starting field-work. This is in the nature of a plant or investment for the season. Once at work, the expense is not great. It costs little more to keep a party in the field for six months than for three months, while the amount of work done by the party is doubled. Therefore, long field-seasons are more economical than short ones.

The following table shows the cost of the work in the several areas under survey, including field and office expenses: —

Area.	Scale.	Cost per sq. mi.	Remarks.
Massachusetts...........	1:62500	12.00	Includes no primary triangulation.
New Jersey..............	1:62500	6.50	Includes some triangulation.
Dist. of Columbia........	1:62500	7.30	Includes no primary triangulation.
Appalachian region......	1:125000	3.00	
Missouri, Kansas.........	1:125000	.90	Aided greatly by land surveys.
Texas....................	1:125000	2.00	
Arizona..................	1:250000	1.00	
California...............	1:125000	3.00	
Oregon...................	1:250000	3.40	
Montana..................	1:250000	2.00	

The sheets, as completed, are engraved upon copper. For each sheet, three copper plates are used. Upon one is engraved all the drainage; upon another, the contours, expressing the relief; and upon the third, all culture and lettering. In printing, colors are used, — blue for drainage, brown for contours, and black for culture and lettering. At the present date, 120 sheets have been engraved, comprising an area of 250,000 square miles, parts of which were surveyed by the Powell Survey of the Rocky Mountain Region, by the Wheeler Survey, and by the Northern Transcontinental Survey.

HENRY GANNETT.

AMERICAN NEUROLOGICAL ASSOCIATION.

THE thirteenth annual meeting of the American Neurological Association was held at Long Branch on July 20–22. The president of the meeting, Dr. L. C. Gray of Brooklyn, in his opening address, reviewed the position of the study of neurology in this country as compared with European lands. America does not at all suffer by the comparison. In the movement which in the past twenty-five years has raised neurology to a science, the names of American workers are prominent, and the number of societies specially devoted to its interest is as large as in any other country.

The recent advance in our knowledge of the functions and diseases of the central nervous system is hardly appreciated, except by such as can remember how things stood twenty years ago. A medical student, who, in 1869, would have stated that the stimulation of the cortex of the brain would give rise to definite movements, would certainly not have received his degree; while the student of 1870, who would not have mentioned this fact, would have stood in equal danger. The amount of research, with a variety of ingeniously devised methods, that has been expended since then upon the localization of function in the cortex of the brain, is an excellent example of the great activity now current in neurological problems. In every direction — in the improvement of apparatus for diagnostic purposes, in the application of therapeutic agencies, in the rational care of the insane — have there been rapid strides, demonstrating beyond a doubt the important function of a neurological association.

The number and quality of the papers presented gave evidence of the increasing attention which the study of nervous diseases is here gaining. Dr. B. Sachs gave an interesting account of a case of arrested cerebral development. It was that of a child with hereditary predisposition to insanity, who lived for two years without exhibiting any but the most rudimentary signs of intelligence. It was listless, inactive, never learned to speak, and in its last period became blind. On examining the brain, the surface appearance was noteworthy. The left island of Reil — a group of cortical matter specially related to the faculty of speech — was exposed. In a normal child it would have been folded inwards, and an abnormal deviation accounts for the failure to develop speech. Many of the fissures flowed together which normally should be separate, — a mark of low-type and undeveloped brains. A microscopic examination showed that the pyramidal cells of the cortex, whose function (in parts of the cortex) is specially connected with motion, were abnormal; their positions were reversed, the nucleus faded, and the processes poorly developed. Outside the cells the appearance was normal. Dr. Sachs considered that the case was one of pure arrested development, the brain having grown to a certain stage in the development, and then degenerative processes set in.

Dr. C. L. Dana recounted the remarkable history of a simple, chronic, neuræsthenic tremor in a certain family. This tremor is present in three generations, and has attacked forty-four members of the family. The original member thus affected has had the tremor for seventy years: he can momentarily control it, and any excitement increases its intensity, as well as affects the clearness of his speech. He is a watchmaker by profession, and very skilfully controls the shaking at the instant when his hand must be steady. The tremor ceases in sleep, and his walk and posture are normal. The hereditary history is unusually interesting. His grandfather was intemperate, his father insane, his nine children all have the tremor to a greater or less degree, and some are mentally peculiar. Seven of these children married and produced thirty-four children, all of whom have the same tremor, and the other peculiarities still remain. There are evidences that the tremor, though present, is dying out in the third generation. It is noteworthy that an adherence to Spiritualism is hereditary in the same family.

Dr. Gray called attention to the serious aspects of chorea. This disease is often treated less seriously than it merits. The majority of cases occur in children between eight and twelve years of age, and frequently the attacks are slight and readily outgrown. The cases which the physician should regard with greatest anxiety are those in which convulsions occur, in which there occur spasms of the respiratory apparatus, in which there is hysteria or cardiac or pulmonary weakness. The essential part of the treatment is complete rest, the exercising of the muscles having a hurtful influence.

Dr. Spitzka called attention to the severe injuries which the brain of dogs could undergo with impunity, and to the obliteration in vigorous animals of the injury done by needles forced into the brain. There are great individual differences between dogs in this respect, and a dog once operated upon seemed better able to endure a second operation. These experiments seemed to justify the piercing of the brain in surgical operations.

Dr. J. H. Lloyd cited a typical case in the peculiar borderland of insanity known as the 'insanity of doubt.' The patient has a morbid impulse to do things over and over again, for fear they are not done exactly right. She gets in and out of bed twenty times, until she does it just so. She sends her husband down at night to light and extinguish a gas-burner in a definite way, and cannot rest until it is properly accomplished; otherwise she is perfectly rational, recognizes the nature of her weakness, but cannot resist it.

A very valuable contribution was that by Dr. C. L. Dana, describing a case of anencephalis. An apparently normal, healthy child lived for two and one-half days: it cried very little, at times opened its eyes, and re-acted to reflex stimulation. On opening the skull the cerebrum was seen to be entirely absent, there being nothing above the corpora quadrigemina except a not well-developed thalamus. Such cases are rare, and are valuable for the light they shed on the connections between the spinal cord and the brain. The cerebrum being absent, all such systems of fibres as connect it with lower centres are absent. Prominent amongst these is the pyramidal tract, which conducts voluntary movements, and these were entirely absent. The sensory columns of the cord were intact, as were also the cerebellum and the cranial nerves, except, of course, the olfactory nerves. The value of such a case is the independent testimony it affords to the correctness of the sensory and motor fibre-systems as deduced by other methods.

Amongst the other papers read was one by Dr. Ott, urging on experimental evidence the existence of heat-centres in the spinal cord; by Dr. Dercum, describing two cases of chorea limited to one-half the body and accompanied by Bright's disease; by Dr. Spitzka, carefully delineating the symptoms of acute delirium; by Dr. Mills, aiming to ascertain a distinctive symptom between polio-myelitis and multiple neuritis; by Dr. Putnam, on a case of overgrowth of the skull bones; by Dr. Hun, on the symptoms accompanying a tumor of the pons; by Dr. Jacoby, urging the treatment of neuralgia by sprays of extreme cold; and by Dr. Kellogg, on the effect of baths in mental disease.

The limit of membership was increased to one hundred, and Dr. W. A. Hammond was elected an honorary member. The president for next year will be Dr. J. J. Putnam of Boston.